

## **Galena Aquatic Restoration Project: Context**

The Timms Gold Dredging Company operated a mining dredge on the Middle Fork John Day River near Galena from the fall of 1933, operating continuously until the spring of 1939. While the dredge provided employment and produced a significant quantity of gold and other precious metals, it also resulted in unintended impacts to the Middle Fork John Day River. Dredge mining resulted in a near complete loss of floodplain connectivity, a simplified riparian community, and lack of channel diversity and complexity. Dredge rock piles or tailings in the Middle Fork John Day River also obstruct the historical confluence of Bear Creek with the River, forcing Bear Creek into a series of ponds between the rock piles and the River toeslope for a distance of 1.2 miles and obstructing fish passage to 4.1 miles of suitable habitat in Bear Creek.

Dredge mining completely overturned the floodplain deposits, bringing deep, coarse alluvial deposits to the surface and winnowing fines and finer gravels. The result today is a channel with bed and banks formed of cobble-dominated alluvium.

Flood flows do not have enough power to reshape those deposits, therefore, the rocks will likely not be able to be reworked like natural streams can. Typically, fine soil and gravels occur on the floodplain and cobbles are in the bed or buried in the banks. This is not a normal condition and the river does not appear to be competent to adjust the channel today.

Limiting factors for spring Chinook and Federally-listed summer steelhead include degraded floodplain connectivity, degraded channel structure/complexity, degraded riparian areas and large wood recruitment, altered hydrologic processes, degraded water quality, altered sediment routing, and impaired fish passage.

Conservation plans identify the project area as a priority for actions that restore channel-floodplain connectivity, stream corridor structure, function, and natural thermal conditions. Oregon Department of Environmental Quality (DEQ) has developed a Total Maximum Daily Load (TMDL) and Water Quality Restoration Plan for the John Day Basin to address temperature in the Middle Fork John Day River which was formerly a water quality limited (303(d)) for water temperature. The Forest Service as a Designated Management Agency has completed a Water Quality Restoration Plan which provides guidance for meeting the Clean Water Act.

The DEQ TMDL actually developed an alternative to consider how stream restoration in locations such as the Galena Aquatic Restoration Project would improve conditions and move the water quality beneficial uses towards goals of the TMDL. Then, a DEQ planner worked with the Blue Mountain Ranger District to look at the Galena Aquatic Restoration Project in isolation; they modeled restoring riparian vegetation and natural channel/floodplain form for this segment of river and determined a decrease by 3 degrees Fahrenheit in the 7 day average daily maximum value would be achieved, positively affecting stream temperatures for approximately 4 miles downstream of the project.

The Malheur National Forest considered the cumulative effects of an aquatic restoration project to restore riparian processes and functions affected by historical dredging in the Forest's Big Mosquito Large Landscape Restoration Project signed in 2015.

The overall goal of the Galena Aquatic Restoration Project is to restore the characteristics of a naturally functioning, self-maintaining ecosystem in the Middle Fork John Day River on public lands managed by the Malheur National Forest.

Physical and biological project objectives are to restore the depositional environment in this response reach where processes are self-maintaining (increase planform variability & codominant channels, decrease width-to-depth, increase pools); restore floodplain connectivity; restore large wood abundance; decrease depth to alluvial aquifer; restore riparian vegetation; reduce solar load; improve wildlife habitat; and to restore spawning and rearing habitat and connectivity (fish passage) with Bear Creek.

The Malheur National Forest submitted a proposal with our partner The Freshwater Trust through the Confederated Tribes of Warm Springs to complete a design for that project, and were awarded the funds. Due to the diversity of comments received from stakeholders during the Big Mosquito Project, our design planning team will be hosting a series of public meetings to involve community stakeholders in development of conceptual designs. Stakeholder input is vital to assisting the planning team in designing a project that will meet our goal of restoring the riparian process and function of the Middle Fork John Day River downstream of Galena, Oregon, while also recognizing the historical values of this ecologically and historically important area.